

Wherefore, we claim:

1. A tampon applicator barrel comprising:

a thermoplastic resin; and

a thermoplastic elastomer in an amount sufficient to adjust elasticity so that the modulus of elasticity of the tampon applicator barrel is less than about 53 psi.

2. The tampon applicator barrel of claim 1, wherein the modulus of elasticity is less than about 46 psi.

3. The tampon applicator barrel of claim 1, wherein the tampon applicator barrel has an outside diameter about 0.67 inches, a wall thickness about 0.027 inches, and the modulus of elasticity is about 32 psi.

4. The tampon applicator barrel of claim 1, wherein the tampon applicator barrel has an outside diameter about 0.60 and a wall thickness about 0.027 inches, and the modulus of elasticity is less than about 32 psi.

5. The tampon applicator barrel of claim 3, wherein said thermoplastic elastomer is sufficient to adjust the energy needed to compress the tampon applicator barrel by 0.025 inches to less than 0.26 lbs.-inch.

6. The tampon applicator barrel of claim 4, wherein said thermoplastic elastomer is sufficient to adjust the energy needed to compress the tampon applicator barrel by 0.025 inches to about 0.22 lbs.-inch.

7. The tampon applicator barrel of claim 3, wherein said thermoplastic elastomer is sufficient to adjust the supportable load of the tampon applicator to less than 2.06 lbs.

8. The tampon applicator barrel of claim 4, wherein the supportable load of the tampon applicator is about 1.74 lbs.

9. A tampon applicator barrel having an outside diameter about .056 inches and a wall thickness about 0.027 inches, comprising:

a thermoplastic resin; and

a thermoplastic elastomer in an amount sufficient to adjust elasticity so that the modulus of elasticity of the tampon applicator barrel is less than 79 psi.

10. The tampon applicator barrel of claim 9, wherein the modulus of elasticity is about 39 psi.

11. The tampon applicator barrel of claim 9, wherein said thermoplastic elastomeric is sufficient to adjust the energy needed to compress the tampon applicator barrel by 0.025 inches to less than 0.36 lbs.-inch.

12. The tampon applicator barrel of claim 11, wherein the energy needed to compress the tampon applicator barrel by 0.025 inches is about 0.25 lbs.-inch.

13. The tampon applicator barrel of claim 9, wherein said thermoplastic elastomeric is sufficient to adjust the supportable load of the tampon applicator barrel to less than 2.83 lbs.

14. The tampon applicator barrel of claim 13, wherein said thermoplastic elastomeric is sufficient to adjust the supportable load of the tampon applicator barrel to about 1.96 lbs.

15. The tampon applicator barrel of claim 1, wherein the thermoplastic resin is a polyolefin.

16. The tampon applicator barrel of claim 15, wherein the polyolefin is a low density polyethylene.

17. The tampon applicator barrel of claim 1, wherein said thermoplastic elastomer is a block copolymer, and wherein said block copolymer is a styrene-butadiene-styrene block copolymer.

18. The tampon applicator barrel of claim 17, wher in said block copolymer is a plurality of styrene-butadiene-styrene block copolymers.

19. The tampon applicator barrel of claim 18, wherein said plurality of styrene-butadiene-styrene block copolymers includes three styrene-butadiene-styrene block copolymers, each having a different percent composition by weight of styrene.

20. The tampon applicator barrel of claim 1, further comprising a flow modifier.

21. The tampon applicator barrel of claim 20, wherein said flow modifier is an ethylene copolymer.

22. The tampon applicator barrel of claim 21, wherein said ethylene copolymer is ethylene methyl acrylate.

23. The tampon applicator barrel of claim 1, further comprising a plasticizer.

24. The tampon applicator barrel of claim 23, wherein said plasticizer is mineral oil.

25. The tampon applicator barrel of claim 1, further comprising a slip/mold release agent.

26. The tampon applicator barrel of claim 25, wherein said slip/mold release agent is stearyl erucamide.

27. The tampon applicator barrel of claim 1, further comprising an antioxidant.

5 28. The tampon applicator barrel of claim 27, wherein said antioxidant is at least two antioxidants.

10 29. The tampon applicator barrel of claim 28, wherein said at least two antioxidants are tetrakis [methylene 3,5-di-tert-butyl-4-hydroxyhydrocinnamate)] methane and tris (2,4-di-tert-butyl phenol) phosphite.

30. The tampon applicator barrel of claim 19, further comprising:

an ethylene copolymer; and

a mineral oil.

15 31. The tampon applicator barrel of claim 30, further comprising stearyl erucamide.

32. The tampon applicator barrel of claim 31, further comprising an antioxidant.

33. A tampon applicator barrel having a soft, flexible body for comfort and ease of insertion into the vagina comprising:

a low density polyethylene;

at least three styrene-butadiene-styrene block copolymers,  
5 each styrene-butadiene-styrene block copolymer having percentage by weight of styrene different than that of the other two block copolymers;

a compatibilizer/flow modifier; and

a plasticizer.

10 34. The tampon applicator barrel of claim 33, further comprising an antioxidant.

35. The tampon applicator barrel of claim 33, further comprising a slip/mold release agent.

15 36. The tampon applicator barrel of claim 33, wherein a first of said at least three block copolymers has about 29 percent by weight of styrene.

37. The tampon applicator barrel of claim 36, wherein a second of said at least three block copolymers has about 31 percent by weight of styrene.

38. The tampon applicator barrel of claim 37, wherein a third of said at least three block copolymers has about 43 percent by weight of styrene.

39. The tampon applicator barrel of claim 33, wherein said low density polyethylene is about 25 to about 75 percent by weight of the total weight of the tampon applicator barrel.

40. The tampon applicator barrel of claim 33, wherein said each styrene-butadiene-styrene block copolymers is present in an amount about 5.5 to about 16.6 percent by weight of the total weight of the tampon applicator barrel.

41. The tampon applicator barrel of claim 33, wherein said compatibilizer/flow modifier is an ethylene copolymer, and wherein said plasticizer is mineral oil.

42. The tampon applicator barrel of claim 34, wherein said antioxidant is at least two antioxidants, and wherein said at least two antioxidants are tetrakis [methylene (3,5-di-tert-butyl-4-hydroxyhydrocinnamate)] methane and tris (2,4-di-tert-butyl phenol) phosphite.

43. A tampon applicator barrel having a soft, flexible body for comfort and ease of insertion into the vagina comprising:

a low density polyethylene;

at least three styrene-butadiene-styrene block copolymers,  
each styrene-butadiene-styrene block copolymer having percentage  
by weight of styrene different than that of the other two block  
5 copolymers;

an alpha olefin compatibilizer/flow modifier;

a plasticizer;

a plurality of antioxidants; and

a slip/mold release agent.

10 44. The tampon applicator of claim 43, further comprising a  
pigment.

45. A method for making a tampon applicator barrel having a  
soft, flexible supporting structure comprising the steps of:

combining an elastomeric composition, including melting said  
15 elastomeric composition, to form a melted resin;

extruding said melted resin into a plurality of soft  
pellets;



dry blending said plurality of soft pellets with a plurality of pellets of a low density polyethylene to form a pellet mixture;

melting said pellet mixture together to form a polymeric

5 compound; and

molding said polymeric compound to a desired shape for the tampon applicator barrel.

10 46. The method of claim 45, wherein said elastomeric composition includes a plurality of styrene-butadiene-styrene block copolymers, and wherein the step of combining said plurality of block copolymers includes combining said plurality of block copolymers with a plasticizer, a compatibilizer/flow modifier, a slip/mold release agent, and an antioxidant.

15 47. The method of claim 46, said combining step includes the step of situating said plurality of styrene-butadiene-styrene block copolymers, said plasticizer, said compatibilizer/flow modifier, said slip/mold release agent, and said antioxidant in a twin screw extruder before combining said block copolymers so that said plurality of block copolymers are combined and melted  
20 within said twin screw extruder.

48. The method of claim 46, further comprising the step of combining polyethylene with the elastomeric composition prior to the step of extruding.

49. A soft, flexible polymeric composition comprising:

5 a polyolefin; and

at least two styrene-butadiene-styrene block copolymers, each having a percentage by weight of styrene different than the other, in amounts sufficient to adjust the elasticity of the composition.

10 50. The composition of claim 49, wherein said at least two styrene-butadiene-styrene block copolymers is three styrene-butadiene-styrene block copolymers, each having a different percentage by weight of styrene.

15 51. The composition of claim 50, wherein a first of said at least three block copolymers has about 29 percent by weight of styrene.

52. The composition of claim 50, wherein a second of said at least three block copolymers has about 31 percent by weight of styrene.

53. The composition of claim 50, wherein a third of said at least three block copolymers has about 43 percent by weight of styrene.

54. The composition of claim 50, wherein each of said at least three block copolymers is present in an amount about 5.5 to about 16.6 percent by weight of the total weight of the composition.

55. The composition of claim 49, wherein said polyolefin is a low density polyethylene.

56. The composition of claim 55, wherein said low density polyethylene is about 25 to about 75 percent by weight of the total weight of the composition.

57. The composition of claim 49, further comprising a flow modifier.

58. The composition of claim 57, wherein said flow modifier is an ethylene copolymer.

59. The composition of claim 58, wherein said ethylene copolymer is ethylene methyl acrylate.

60. The composition of claim 49, further comprising a plasticizer.

61. The composition of claim 60, wherein said plasticizer is mineral oil.

62. The composition of claim 60, wherein said plasticizer is about 5 to about 15 percent by weight of the total weight of the composition.

63. The composition of claim 49, further comprising a slip/mold release agent.

64. The composition of claim 63, wherein said slip/mold release agent is stearyl erucamide.

65. The composition of claim 49, further comprising an antioxidant.

66. The composition of claim 65, wherein said antioxidant is selected from the group consisting of tetrakis [methylene (3,5-di-tert-butyl-4-hydroxyhydrocinnamate)] methane and tris (2,4-di-tert-butyl phenol) phosphite.